

Heavy-Duty Natural Gas Drayage Truck Replacement Program



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South Coast Air Quality Management District

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ARRAVT045

Overview

Timeline

- Start: January 2010
- Finish: January 2014
- 67% Complete
- 121 LNG trucks deployed
- Additional LNG trucks to be deployed by 6/30/11

Budget

- Total Project Funding: \$33,740,000
 - DOE: \$9,408,389
 - \$7,967,550 for trucks
 - \$500,000 education/outreach
 - \$940,839 administrative
 - Cost Share: \$24,331,611

Barriers

- Higher cost of NG vehicle
- Limited experience with NG technology
- Limited infrastructure for re-fueling
- Concerns about maintenance
- Currently only one engine manufacturer (Cummins Westport)
- Difficulty for individual owners/operators to secure financing
- Long lead time for manufacturing

Partners

- Project Lead: South Coast Air Quality Management District
- U.S. DOE
- California Air Resources Board
- Ports of Los Angeles and Long Beach
- U.S. EPA
- 5 Clean Cities Coalitions

Project Objectives/Relevance

The Ports of Los Angeles and Long Beach represent the largest Port complex in the U.S. Heavy-duty diesel trucks serving the Ports are a significant source of air pollution in the region. Replacement with alternative fuel vehicles can provide immediate and long-term air quality benefits.

- Increase the use of alternative fuels and reduce U.S. dependence on imported petroleum fuels
- Achieve significant reductions in NOx and diesel PM emissions
- Reduce toxic air emissions and associated public health risk from diesel fuel combustion
- Reduce greenhouse gas emissions
- Create and preserve jobs to stimulate the economy
- Increase end-user knowledge, experience and acceptance of alternative fuel vehicles
- Provide outreach and training to truck operators and technicians involved in maintaining alternative fuel vehicles

Approach

- Grant funds will be used to offset the incremental cost of a natural gas truck
- Old diesel truck must be scrapped and replaced with the NG vehicle
- Solicit applications by issuing Program Announcements
- Extensive outreach with the help of the Ports, trucking associations, natural gas engine manufacturers, and truck dealerships
- Translation support services
- One-on-one meetings with applicants
- Orientation and contract workshops
- Meetings with financial institutions:
 - Clarify program requirements
 - Assist individual truck owner/operators in obtaining financing for the balance not covered by the grant funds



Technical Accomplishments and Progress

Past Accomplishments:

- Solicited applications in July 2009
- Received over 1,500 applications, including diesel and natural gas trucks
- 559 LNG trucks deemed eligible
 - Of these, 121 LNG trucks received DOE grant funds
- All 121 LNG trucks were in operation by 12/31/10



	Emission Reductions (tons/yr)	
	NOx	PM
121 LNG Trucks *	102	3.5

* These LNG trucks represent a subset of the 559 LNG trucks approved under AQMD's Heavy-Duty Diesel Truck Replacement Program.

Source: California Air Resources Board, Proposition 1B Calculator, EMFAC2007.

Technical Accomplishments and Progress

New Accomplishments:

- Completed quarterly performance monitoring for LNG trucks deployed in 2010
- Continued education/outreach activities: 3 outreach events in 2010, and 7 planned in 2011
- Issued new solicitation in February 2011 (received over 1,400 applications)
- 95 LNG trucks deemed eligible
- 15 contracts completed
- Remaining LNG trucks scheduled to be operational by 6/30/11
- Total Number of LNG Trucks Deployed under DOE Clean Cities Grant by 6/30/11: 216

Technical Accomplishments and Progress (Continued)

- ✓ Through a successful partnership with DOE and other funding partners, AQMD will exceed the 180 NG vehicles planned and achieve additional air quality and job benefits in the region
- ✓ Emission reductions will occur over the useful life of each LNG truck, which is estimated at ≥ 15 years
- ✓ The project will reduce consumption of diesel fuel by 2.68 million gallons per year
- ✓ The project will also result in at least a 25% reduction in greenhouse gas emissions
- ✓ This project will preserve/create jobs related to manufacturing, natural gas refueling, maintenance and operation of the NG vehicles
- ✓ Based on 216 LNG trucks deployed, it is estimated there will be about 28 jobs created and retained

Collaborations/Partnerships

- AQMD is serving as the “prime” for this project
- Funding partners include:
 - U.S. Department of Energy, Clean Cities Program
 - California Air Resources Board
 - Port of Los Angeles and Port of Long Beach
 - U.S. Environmental Protection Agency
 - California Energy Commission
- Extensive outreach involving the following partners:
 - Natural gas engine/truck manufacturers
 - Truck dealerships
 - Ports Clean Truck Center
 - Trucking Associations
 - 5 Clean Cities Coalitions



Future Work

- Monitor schedule of deployment for remaining NG trucks
 - All NG trucks expected to be operational by 6/30/11
- Performance Monitoring:
 - Continue to collect quarterly operational data (e.g., mileage and fuel use)
 - Assist truck owners/operators
 - Conduct random inspections/audits
 - Work closely with the Ports to verify the total number of annual port visits by each truck
 - Each drayage truck is equipped with a radio frequency identification (RFID) tag that is used to record each time a truck enters or leaves the Ports
- Continue education/outreach efforts
 - 7 events planned in 2011

Summary – LNG Drayage Truck Project

- Relevance: The program was designed to achieve the following objectives:
 - Increase use of alternative fuels
 - Displace consumption of diesel fuel
 - Significant reductions in emissions
 - Create jobs to stimulate the economy
 - Provide outreach and training
 - Increase end-user experience with alternative fuel vehicles

Summary – LNG Drayage Truck Project

- Approach: Provide incentive for truck owners/operators to replace an old, heavy-duty diesel truck with a new natural gas vehicle
 - Grant funds are used to help offset the high cost of a new NG vehicle
 - Extensive outreach is needed to inform truck owner/operators, manufacturers, dealers, financial institutions, and other stakeholders of funding availability and program requirements
 - Close coordination with engine/truck manufacturers and dealers to ensure NG vehicles will be properly maintained
 - Close coordination with truck manufacturers to ensure NG vehicles will be delivered on-time
 - Monitor performance of NG vehicles annually and conduct random inspections

Summary – LNG Drayage Truck Project

- Technical Accomplishments (DOE Portion Only):

Calendar Year	No. of LNG Trucks	Emissions Reductions (tons/yr)	
		NOx	PM
FY2010	121	102	3.5
FY2011 (Planned)	95 (by 6/30)	80	2.7

- Results:
 - Increased use of alternative fuels
 - Significant reductions in NOx and diesel PM emissions
 - Reduced air toxic emissions and associated public health risk
 - Reduced GHG emissions
 - Preservation and creation of jobs related to manufacturing, natural gas refueling, maintenance and operation of the natural gas vehicles

Summary – LNG Drayage Truck Project

- Collaborations
 - Close coordination and collaboration with funding partners, including:
 - U.S. DOE, Clean Cities Program
 - U.S. EPA
 - California Air Resources Board
 - Port of Los Angeles and Port of Long Beach
 - 5 Clean Cities Coalitions
- AQMD is using a combination of grant funds to leverage sufficient funds to offset the high cost of the natural gas vehicles
- This program has resulted in a high demand for the grant funds
- Only the most cost-effective projects are funded
- Each funding source has specific requirements and AQMD is maximizing the use of these funds to deploy as many NG vehicles possible given the available funds